

Claims 1-30 are presented by this amendment. In this Amendment, Applicants amended claims 1, 9, 10, 12, 13, 14, 15, 16, 17, 18, and 29. Applicants also cancelled without prejudice, claims 31-32. Applicants believe all claims are in full compliance with 35 U.S.C. §112.

Accompanying this Amendment are the Supplemental Declarations requested in the Office Action. In view of these Supplemental Declarations, Applicants believe the rejection of claims 1-32 is now mooted and should be withdrawn.

Applicants have also included the Affidavit of Mr. Sidney Thomas Harris, an experienced chemist in the area of polymers having working for more than 58 years in the coatings industry. Mr. Harris addresses the concerns raised in paragraphs 4, 5 and 6 of the office action relating to the rejections under 35 U.S.C. §112 and 251. Applicants thus believe these rejections have been overcome as discussed in further detail below.

Claims 12-13 and 17-32 were rejected under 35 U.S.C. §112, ¶1, as containing subject matter which was not described in the specification in such a way to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention.

Applicants respectfully traverse this rejection. Applicants submit that support for all features of Claim 12 can be found in ASN 09/201,287 as filed. Paragraph 2 of page 1 discloses a powder coating composition containing a biocide. Paragraph 4 of page 2 discloses a range of micro-organisms that the biocide is active against. Lines 3 to 6 of page 2 disclose resin based polymer powders. Paragraph 3 of page 4 discloses the substantially homogeneous distribution of the biocide in the polymer powder.

With respect to Claim 13, Applicants submit that support for claim 13 is found in lines 11-12 of page 3 of ASN 09/201,287 as filed, which states that useful proportions of biocide are from 0.1 to 10% by weight of the total powder composition. It therefore follows that 90 to 99.9% of the total powder composition will comprise the polymer powder. Claim 10 of the earlier application discloses the use of thermosetting polymer powders in the composition. Claim 11 as filed discloses the use of thermoplastic polymer powders in the composition.

With respect to support for Claim 17, Applicants state that a method of applying an anti-microbial coating on an article is disclosed at page 4, line 6 of ASN 09/201,287 as filed. This application states that the anti-microbial powder coating composition of the invention may be applied by electrostatic spraying, tribocharged spraying, plastics coating (fluidized bed), or the like. All of these methods of application comprise contacting the article to be coated with an anti-microbial coating composition under conditions sufficient to cause said anti-microbial powder coating composition to adhere to the article. The anti-microbial powder coating composition of this invention may comprise particles of a thermoplastic polymer, as disclosed in claim 11. Each particle of the polymer powder contains a particle of a biocide so that the biocide is substantially uniformly distributed throughout the composition (see claim 1). The biocide may be an organic biocide as disclosed at lines 1-5 of page 3. Claim 2 refers to a composition containing 0.1 to 20% by weight of a biocide.

Concerning Claim 18, Applicants submit that support for all features of this claim can be found in ASN 09/201,287 as filed. Line 3 of page 1 states that it is one object of the invention to provide an anti-bacterial coating composition to be applied to a substrate. This

protection is extended to a wider range of micro-organisms in lines 16-18 of page 2 of the application. A method of preparing the anti-microbial powder coating composition by homogeneously mixing an anti-microbial agent into a powder coating pre-mix is disclosed at page 4, lines 9-11.

Regarding Claims 19 and 20, the accompanying Harris Affidavit in paragraphs 7-9, describes how one skilled in the art reading the instant specification would clearly find that liquid biocides are contemplated and covered by the present invention. Thus, Applicants submit that there is no new matter introduced subject matter and that these features are described in the specification in such a way to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention.

These same arguments are applicable to Claim 19, which is also addressed in the Harris Affidavit. Further, the Harris Affidavit addresses similar concerns raised with claims 25, 26 and 27, as described in paragraph 9 thereof.

Regarding Claim 19, Applicants submit that support for the features of this claim may be found Page 2, lines 18 to 23 of ASN 09/201,287 as filed which states that many suitable biocides may be employed in the invention. The criteria for a suitable biocide are that the biocide can be provided in a suitable powder form and that it can survive the coating process. A skilled person in this field would be aware that liquid biocides can be mixed with a suitable support matrix to form a powdered biocide suitable for this application. It is therefore implicit from this disclosure that the biocide may comprise a liquid biocide.

Regarding Claim 20, support for this claim may be found in page 2, lines 18 to 23 of ASN 09/201,287 as filed states that many suitable biocides or may be employed in the invention. The criteria for a suitable biocide is that the biocide can be provided in a suitable powder form and that it can survive the coating process. A skilled person in this field would be aware that liquid biocides can be mixed with a suitable support matrix to form a powdered biocide suitable for this application. It is therefore implicit from this disclosure that the biocide may be comprise a liquid biocide. The term biocide is interchangeable with anti-microbial agent. Applicants submit that the Harris Affidavit, paragraphs 7-10 clearly demonstrates that subject matter which was described in the specification in such a way to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention concerning claim 20.

Regarding Claim 21, Applicants submit that support may be found for this claim at page 2, lines 18 to 23 of ASN 09/201,287 as filed which states, "Many biocides may be suitable employed in the invention and the average skilled man of the art will readily be able to determine by routine experimentation whether the biocidal activity of any particular biocide will be sufficiently retained for his particular needs in the coating. The necessary criteria are that the biocide can be provided in a suitable powder form and that it can survive the powder coating". It is therefore implicit in this disclosure that other biocides such as N-(trichloromethyl)-thiolphthalamide may be substituted for those specifically mentioned.

For Claim 22, Applicants submit that support for this claim may be found at page 2, lines 18 to 23 of ASN 09/201,287 as filed which states, "Many biocides may be suitably employed in the invention and the average skilled man of the art will readily be able to

determine by routine experimentation whether the biocidal activity of any particular biocide will be sufficiently retained for his particular needs in the coating. The necessary criteria are that the biocide can be provided in a suitable powder form and that it can survive the powder coating". It is therefore implicit in this disclosure that other biocides such as 2-bromo-2-nitropropane-1,3-diol may be substituted for those specifically mentioned.

For Claim 23, Applicants submit that support for this claim may be found in Claim 2 of ASN 09/201,287 as filed which states the composition preferably contains 0.1 to 20% by weight of the biocide. As it is implicit from page 2, lines 18 to 23 of the earlier application as filed, that a wide range of biocides may be utilized in this invention with only routine experimentation, it is obvious that this concentration of 2-bromo-2-nitropropane-1,3-diol is within the scope of this invention.

Regarding Claim 24, support for this claim may be found in claim 2 of ASN 09/201,287 as filed which states that the composition preferably contains 0.1% to 20% by weight of the biocide. Furthermore, Claim 3 of the same application states that a concentration between 2 and 6% by weight is more preferable. As it is implicit from page 2, lines 18 to 23 that a wide range of biocides may be utilized in this invention with only routine experimentation, it is obvious that this concentration of 2-bromo-2-nitropropane-1,3-diol is within the scope of this invention.

Concerning Claim 25, Applicants submit that support for this claim may be found at page 2, lines 18 to 23 ASN 09/201,287 as filed which states, "Many biocides may be suitably employed in the invention and the average skilled man of the art will readily be able to determine by routine experimentation whether the biocidal activity of any particular biocide will be sufficiently retained for his particular needs in the coating. The necessary

criteria are that the biocide can be provided in a suitable powder form and that it can survive the powder coating". It is therefore implicit in this disclosure that other biocides such as 3,5-dimethyltetrahydro-1,3,5-2H-thiazine-2-thione may be substituted for those specifically mentioned. Applicants submit that the Harris Affidavit, paragraphs 7-10 clearly demonstrates that subject matter which was described in the specification in such a way to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention concerning claim 25.

Regarding Claim 26, Applicants submit that support for this claim may be found at page 2, lines 18 to 23 of ASN 09/201,287 as filed which states, "Many biocides may be suitable employed in the invention and the average skilled man of the art will readily be able to determine by routine experimentation whether the biocidal activity of any particular biocide will be sufficiently retained for his particular needs in the coating. The necessary criteria are that the biocide can be provided in a suitable powder form and that it can survive the powder coating". It is therefore implicit in this disclosure that other biocides such as 3,5-dimethyltetrahydro-1,3,5-2H-thiazine-2-thione may be substituted for those specifically mentioned. Applicants submit that the Harris Affidavit, paragraphs 7-10 clearly demonstrates that subject matter which was described in the specification in such a way to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention concerning claim 26.

For Claim 27, Applicants submit that support may be found for this claim at Claim 2 of ASN 09/201,287 as filed which states that the composition preferably contains 0.1 to 20% by weight of the biocide. Furthermore Claim 3 of the same application states that a concentration between 2 and 6% by weight is more preferable. As it is implicit from page

2, lines 18 to 23 of the earlier application that a wide range of biocides may be utilized in this invention with only routine experimentation, it is obvious that this concentration of 3,5-dimethyltetrahydro-1,3,5-2H-thiazine-2-thione is within the scope of this invention. Applicants submit that the Harris Affidavit, paragraphs 7-10 clearly demonstrates that subject matter which was described in the specification in such a way to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention concerning claim 27.

Regarding Claim 28, Applicants submit that support for all features of this Claim can be found in ASN 09/201,287 as filed. Line 3 of page 1 states that it is one object of the invention to provide an anti-bacterial coating composition to be applied to a substrate. This protection is extended to a wider range of micro-organisms in lines 16-18 of page 2 of the application. Electrostatic spraying of a coating composition is disclosed at page 4, lines 6 to 7. At page 2, lines 12 to 14, it is disclosed that the stoving temperature of thermosetting powders is at least 120°C, e.g. 140°C to 210°C. It would be obvious to a skilled worker in this field that the baking temperature should be adjusted accordingly when using thermoplastic polymer powders in place of thermosetting powders, therefore this feature is implicitly supported by the disclosure. Claim 1 discloses a powder coating composition particles each of which is a polymer powder and contains a biocide, whereby the biocide is substantially distributed through the composition. The use of thermoplastic polymer powders is disclosed at page 2, lines 8 and 9. Claim 2 discloses a composition containing 0.1 to 20% by weight of a biocide.

Regarding Claim 29, Applicants submit that support for this claim may be found in Claim 14 of ASN 09/201,287 as filed which discloses a method in which precursors of a

polymer powder are mixed with a biocide. The mixture is then heated and extruded into sheet form. The sheet is then granulated, and the granules ground to form a powder, and the powder is sieved to a size appropriate for powder coating. There is no disclosure of using a pre-mixer for the initial mixing step, but it would be obvious to a skilled worker in this field that a pre-mixer could be used to carry out this step. There is also no disclosure of heating the mixture to a temperature high enough to melt it, or cooling the mixture prior to processing, although these steps may be obvious to the skilled worker in the field.

For Claim 30, Applicants submit that the additional step of mixing liquid anti-microbial agents with particles of a solid support material and mixing the particles into the coating pre-mix would be obvious to the skilled worker in the field.

Regarding the rejection of claims 12, 14 and 18 under 35 U.S.C. §102 as being anticipated by each of the cited references, Applicants respectfully traverse these rejections.

In support of these arguments, Applicants submit the Harris Affidavit which addresses each of these references starting on paragraph 10 thereof. Applicants submit that the evidence in the Harris Affidavit clearly distinguishes the presently claimed invention over these three cited references.

It is submitted that these references, alone or in combination with one another, do not show or suggest that in accordance with Applicants' invention, one must get in each particle of polymer, a particle of an antimicrobial agent. The key feature of Applicants' present invention is the homogeneous nature of the composition.

The cited reference of Cueman, U.S. Patent No. 5,238,749, teaches that such an agent may be incorporated in a thermoplastic material which may be applied to a substrate

by a variety of means including electrostatic. There is no teaching or suggestion in Cueman, alone or in combination with any other reference, that the composition should be homogenous.

Applicants have reproduced the compositions of Cueman and when compared to Applicants' claimed composition, the Cueman compositions do not achieve Applicants' benefits, as described in further detail in the accompanying Harris Affidavit.

~~Based on his very detailed studies, Mr. Harris concluded that the method described~~ in the Cueman reference does not provide a homogenous dispersion of biocide in a stoved film; and this lack of homogeneity and uniformity of biocide dispersion will make the applied film incapable of providing a reliable defense against microbial attack (Harris Affidavit, ¶14).

Mr. Harris concludes that there is no showing or suggestion in the Cueman reference that the biocide be homogeneously distributed through the powder as in the present invention (Harris Affidavit, ¶15).

Mr. Harris, relying upon column 2, lines 28+ of the instant specification, describes how one skilled in the art reading this passage would understand how to reproduce the present invention as described in paragraph 16 of his Affidavit.

Mr. Harris describes in paragraph 17 of his Affidavit that the present invention works because each particle of plastic contains a particle of the biocide. Particles of plastics and biocide may have a different capacity to accept an electrostatic charge. Particles of different density behave differently when electrostatically sprayed, and because of this feature, there is less risk that the biocide particles (which differ in density from the pastic ones) will reach the metal surface at different rates. As a result, the surface will have no

biocide in some areas of the metal and a high concentration elsewhere. Mr. Harris opines that nothing in Cueman tells him or one skilled in the art, of this aspect, nor does he suggest such a thing. For this reason, I say that if I, or one skilled in the art, had seen Cueman before the date of June 5, 1996, it would not have shown or suggested to him or one skilled in the art, the present invention as currently claimed. Applicants thus submit that the present invention is not shown or suggested by the Cueman reference, alone or in combination with any of the other cited references.

Regarding the cited JP 06-025561, Mr. Harris describes in paragraph 18 of his Affidavit, his opinion that this reference teaches the incorporation of defined metal salts in a powder coating composition. When one reads the instructions, (e.g., the Examples) they just talk of blending, i.e., they do not promise or achieve a homogenous distribution. Thus, Mr. Harris concludes that this documents is not relevant to the present invention. Application. Applicants thus submit that the present invention is not shown or suggested by the JP 06-025561 reference, alone or in combination with any of the other cited references.

Regarding the cited reference JP 08-060036, Mr. Harris opines in paragraph 19 of his Affidavit that this references proposes adding metal salts, e.g., salts of silver copper and zinc, the ions of which are known to be antibacterial, to a powder coating composition. The metal salts are not added directly but are carried within a matrix of a defined zeolit. Mr. Harris opines that paragraph 0019 of this reference points out that the presence of the antifungal agent can affect the reaction of the polyester resin and the curing agent therefor, and the fact that the metal salt is carried on the zeolite avoids this problem.

Mr. Harris opines in paragraph 19, that the first thing to note is that for a metal anti-bacterial agent to be carried on the zeolite, it must ionize in solution, otherwise the agent cannot reach into the lattice. Mr. Harris opines that this limits the usefulness of the invention of JP 06-225561 to anti-bacterial metal agents. The plastics disclosed in the Abstract is a thermoplastic, i.e., PVC or nylon.

Mr. Harris confirms that in contrast, the agents in the instant invention are all organic anti-bacterial agents. The present invention is concerned with the carrying of such agents into a thermosetting polymer composition, irrespective of whether or not those agents will ionize in contact with water. Mr. Harris therefore concludes that this cited reference is not relevant to the presently claimed invention. Applicants thus submit that the present invention is not shown or suggested by the cited JP 06-225561 reference, alone or in combination with any of the other cited references.

Regarding the rejection of claims 1-9 and 12-32 under 35 U.S.C. §251 as being an improper recapture, Applicants respectfully traverse this rejection. The Examiner suggested that Applicants review the response pages 4-5 of the May 21, 1999 Amendment filed in the parent case, which Applicants' counsel has done. However, it is submitted that those amendments made were merely to clarify that the polymer powder was a **thermosetting** powder, and contains an **organic** biocide in the concentration range claimed. All three of these features are clearly set forth in pending claim 1 and thus Applicants submit there is no attempt at recapture. Moreover, in reviewing the remarks in that Amendment, Applicants did not make any statements whatsoever that these clarifications were being made to avoid the prior art or to narrow the scope of any claim.

It is respectfully submitted that these amendments were merely clarifying amendments not meant to effect claim scope. Thus, Applicants submit that there is no recapture.

It is submitted that the newly presented claims and the original claims are patentable to the present inventors.

Applicants respectfully request favorable reconsideration of the amended application.

Respectfully submitted,

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